

Privy Council Appeal No. 7 of 1912.

**The Ore Concentration Company (1905),
Limited, and another** - - - *Appellants.*

v.

The Sulphide Corporation, Limited - - - *Respondents.*

FROM

THE SUPREME COURT OF THE STATE OF NEW SOUTH WALES.

JUDGMENT OF THE LORDS OF THE JUDICIAL COMMITTEE OF
THE PRIVY COUNCIL, DELIVERED THE 6TH MARCH 1914.

Present at the Hearing.

THE LORD CHANCELLOR. — — LORD SUMNER. — —
LORD DUNEDIN. LORD PARMOOR.
LORD PARKER OF WADDINGTON.

[*Delivered by* LORD PARMOOR.]

This is an Appeal from the Judgment of Mr. Justice Simpson, Chief Judge in Equity of the Supreme Court of New South Wales, delivered on the 24th July 1911. The action was brought to restrain the Respondents from infringing certain Letters Patent of New South Wales, No. 10,001 of 1900, granted to Francis Edward Elmore and No. 11,307 of 1901, granted to Alexander Stanley Elmore. So far as the action referred to Letters Patent No. 10,001 of 1900, granted to Francis Edward Elmore, it was abandoned at the trial, and this patent is now only material so far as it may affect the novelty of the invention claimed in the patent granted to A. S. Elmore. At the trial of the action the Appellants relied only on claim 1 of the Letters Patent No. 11,307 of 1901, and the Respondents

[14] J. 302. 100.—3, 1914. E. & S.

did not attack the validity of any claims of the said Letters Patent other than claims 1 and 2. The hearing of the action lasted many days and experts of great eminence gave evidence on both sides. In the result the action was dismissed. This Appeal is brought by virtue of an Order of the Supreme Court of New South Wales granting leave to appeal and made on the 30th October 1911.

The Appeal was originally argued before the Board in October last and was subsequently re-argued.

The Chief Judge in Equity of the Supreme Court of New South Wales, in construing A. S. Elmore's patent, referred to the case of the British Ore Concentration Syndicate *v.* Minerals Separation, Limited, tried in this country and carried to the House of Lords (27 R.P.C. 33). He pointed out however in his judgment that the case before him was in three material respects different from that tried in the English Courts.

"(1.) The New South Wales patent is a different document from the English patent.

"(2.) Everson's specification was before the English Courts; only the claims in her specification are before this Court.

"(3.) Criley and Everson's alleged prior publication (Exhibit 10) was not pleaded in England and consequently was not before the Court."

Their Lordships agree with the Chief Judge in Equity that these distinctions exist, and that they are material in character. Lord Atkinson in his opinion in the House of Lords states that there are only three constructions of which the English patent is reasonably susceptible. The first of these constructions, which was adopted by the majority of their Lordships, is that the only discovery alleged is the merit of acidulation, and that the process to which acid is to be applied is described in terms so wide that it covers any

process, certainly any known process, of separating mineral substances by the selective action of oil in a mixture of ore, water, and oil. It was not argued by either of the experienced leading counsel before their Lordships that the New South Wales patent was susceptible of this construction without modification. The second of these constructions, which was not adopted, in the opinion of any noble Lord, is that:—

“ The invention claimed consists in the addition of a
“ relatively small quantity of acid to a mixture of pul-
“ verised metallic ore, water and oil of any consistency, irre-
“ spective of the proportion in which the oil may be present
“ relatively to the other ingredients, provided only that the
“ water and oil or water oil and ore, whichever it may be,
“ have been reduced to a freely flowing pulp.”

Mr. Walter, the leading Counsel for the Appellants, did not argue that the New South Wales patent was directly susceptible of this construction, but urged their Lordships to accept a construction, which, when analysed, is in some respects not dissimilar, since it connoted the free access of the oil to the metal in the mixture, a condition which would not be present unless there was a flowing pulp. The third of these constructions, which was adopted by Lord Atkinson and Lord Shaw, limited the invention claimed to cases in which the oil by “its own
“ buoyancy floats the minute particles of the
“ powdered ore to the surface.” This limitation could not directly apply to the New South Wales patent, since the patentee in terms includes the use of a selecting material of greater gravity than water and describes an apparatus by which separation can be effected without floating the minute metallic particles to the surface by the buoyancy of oil.

It was known many years prior to 1901 that oil, by its affinity to metal, operated to differentiate metal from gangue in a mixture of oil, water, and ore. Haynes's patent, published in

1860, describes a method of separation of metal from gangue by the use of an agent containing fatty or oleaginous matter. This document is, however, not more than an indication of the date at which attention was first directed to the affinity of oil for metals, and does not affect the novelty of the invention claimed. In 1886 the claims of the Everson patent were published in New South Wales. It is difficult to say that these claims, which directly refer to methods described in a specification, which was not published, and to which, for the purpose of this case, reference cannot be made, give any information of practical value. They do indicate that, for some unexplained reason and by some unexplained method, the mixing with a powdered ore of a fat or oil or a constituent thereof, and of an acid or soluble neutral, or acid salt, and water, will conduce to the breaking up of the mass, and the separation of metals or metallic minerals from rocky gangues, thus introducing a reference to the principle of acidulation. Whatever may be the extent and effect of this information, similar information is given in a more explicit form in an extract from the *Engineering and Mining Journal* in 1890.

To this extract the attention of their Lordships was directed in considerable detail. This extract describes a test of the "Criley and Everson oil process" for the extraction of sulphurets from any ore by the use of oil, which the correspondent of the Journal had witnessed.

"The ore was crushed and passed through
" a 50 mesh sieve, weighed and thoroughly
" mixed with black thick oil. To water heated
" to near boiling was added enough sulphuric
" acid to give it a tartish taste. This acidulated
" water was then mixed with the mass of oil and
" ore. A thick scum of sulphurets rose to the
" surface and was skimmed off, leaving the

“ hitherto black ore as white as snow—in fact, “ pure silica.”

Although this test was published in the Journal many years ago, it is not suggested that the process ever came into practical use prior to the date of the A. S. Elmore patent. Judging by the experiments made, it was only effective in the case of an ore containing carbonates, and there was no proof that carbonates were found in all Australian ores. It was further urged on behalf of the Appellants that the directions as to the quantity of sulphuric acid were too vague, but the Respondents replied that the directions were in themselves sufficient, and in any case not more vague than the directions contained in the A. S. Elmore patent. Even if the test process is not to be discarded as a failure, it does no more than give information that if to a greased mixture of pulverised metal and rock you add boiling sulphuric acid in a sufficient quantity of water, in some way a differentiation is effected as between the metal and the gangue. There is no indication that success depends upon the presence of carbonate in the ore, and in the absence of such indication, failure was at least as probable as success.

The value of the Respondents' evidence on the meaning and teaching of this document was much vitiated owing to the form in which certain questions were put to their expert Mr. Blount. He was asked (Question 3164) to read the document with the knowledge which he would have in 1901. A question in this form is not admissible, and the objection taken by the Counsel for the Appellants at the time was well founded. It is a general canon of construction, applicable to all documents, that the document should be construed as if the Court had to construe it at the date of publication, to the

exclusion of information subsequently discovered. In patent cases the observance of this canon of construction has great importance. It is common, in such cases, to have a number of documents placed in evidence extending over a considerable period of time, each of which is relied on as disclosing relevant information prior to the date of the patent. If these documents require the assistance of experts to aid the Court in construction, the Court is deprived of the benefit of such assistance if the witness is asked to read the document not in reference to what was known at the date of publication, but to knowledge only acquired at some subsequent date.

The patent granted to Robson and Crowder in the year 1894 can be shortly dismissed. It describes a method of separation not based on acidulation, but to economise the use of water. The passage in the patent which was especially called to the attention of their Lordships, and which refers to the methods either of Criley and Everson or Everson does not add anything to the information to be deduced from the two documents to which reference has been made. The only remaining document to which the attention of their Lordships was directed is the patent of F. E. Elmore published in 1900. This patent does not refer to the use of acids during the process of separation. It describes an important method for separating the metallic from the rocky constituents of ores by first mixing water in considerable quantities with the pulverised ore, and then adding a more or less thick oil. The oil entraps the metallic constituents and retains them, while the mixture of water with the rocky constituents is allowed to subside. Subsequently the oil is separated from the metallic constituents by a centrifugal machine.

The result of the examination of the above documents is that at the date of the publication of the A. S. Elmore patent the principle of acidulation as a factor in the separation of metals or metallic particles from the earthy or rocky constituents in pulverised ores had been referred to in the claims of Everson, and in the test process of Criley and Everson. The Everson claims may be disregarded. The test process of Criley and Everson was found to be a failure, unless the ores contain carbonates, and in any event the only information given is that if to a greased mixture of pulverised metal and rock you add boiling sulphuric acid in a sufficient quantity of water in some way a differentiation is effected as between the metal and the gangue. It was further known that there was an affinity between oil and metals or metallic particles, and that this affinity could be used in the separation of metals and metallic particles from earthy or rocky constituents by a practical and useful method as described in the patent of F. E. Elmore.

The next question is the construction of the patent. This is solely a matter for the Court, with the assistance of expert witnesses to explain technical words or technical processes. The patent, including the title, the body of the specification, and the claim or claims, is for the purpose of construction to be regarded as one document, and when construed it defines the nature and ambit of the invention claimed.

The patent is for an invention entitled "Improvements in the process and apparatus for separating mineral substances by the selective action of oil." It is noticeable that the expression "selective action of oil," on which much of the argument has turned, is used in the title as well as in the body of the specification

and the claim. It is not an expression to which any definite technical scientific meaning is attached.

The patent commences with a narrative statement of the method by which the selective action of oil has been utilised to separate metals and metallic substances from gangue. This is said to be generally done by pulverising the ore and suspending it in a considerable quantity of water, so as to make a freely flowing pulp, and then mingling it with oil, preferably heavy oil. The effect is that most of the metallic substances are entrapped in the oil, and when the mixture rests, the oil floating on the top is separated from the gangue which is run off with the water as tailings. In substance the method said to be generally adopted is the method of F. E. Elmore, though heavy oil is only preferably used. Unless the oil used has sufficient tenacity to retain the entrapped metallic particles separation would not be effected. The oil is afterwards separated from the metallic substances usually by centrifugal action.

The patentee then sets out his invention. He states that in carrying on "this separating process," he has discovered that in some cases a slight acidulation greatly enhances the selective action of the oil. No scientific explanation is suggested or given, but the result and the utility of the result are not questioned. The enhanced selective action of the oil operates to give a better separation than when no acid is present. The words "selective action of the oil" have the same meaning in this passage as in the preceding narrative. To effect separation the oil must be adequate in quantity and of sufficient tenacity not only to entrap the oil but to hold and carry it until separation is effected.

No special directions are given or required for acidulation. A little acid may be added to

the oil, such as oleic acid, or to the aqueous pulp, such as sulphuric acid, or the acid cuprous liquors, obtained in mine working. In either case the quantity is small, and often need not exceed one five-hundredth part of the volume of oil or water employed in the operation, the quantity varying according to the character of the material treated.

The patentee includes in his process not only oil but other fluids with selective action, such as tar or varnish.

Tar is of greater gravity than water so that, as the patentee explains in a subsequent part of his patent, in this case a separation does not depend on the floating or rafting principle, but would be carried out by means of the apparatus described in figure (3). If plumbago, elementary sulphur, or other similar substances are present the oil attaches itself and coats such particles, and the selective action of oil is not different from that in the case of metals or metallic substances.

Having described his main invention the patentee describes two forms of apparatus for effecting separation.

It is not necessary to consider in any detail figures (1) and (2). The apparatus depends on the buoyancy of the oil and a separation is effected by floating the metallic ingredients in the oil over the lip of a weir, while the gangue subsides and issues through a pipe provided with a cork. The oil is subsequently separated from the metallic ingredients by a centrifugal machine.

The Appellants place considerable importance on the second form of apparatus described in the patent and illustrated in figure (3). In this apparatus a thin stream of oil is thoroughly mixed with the pulp, and the oil " by its selective action " coats or absorbs the metallic particles, sulphides,

“tellurides, and the like.” The whole mixture then flows over a weir and down an incline over a number of wave-like steps or baffles by which the stream of pulp and “oil globules” is thrown against an oiled apron continuously moving in the opposite direction. Separation is effected by the oiled surface of the apron taking up most of the oil globules and by also picking up from the pulp such particles of metallic substances as have escaped oil selection in the mixer. The patentee distinctly draws attention to the fact that separation in this apparatus does not depend upon the buoyancy of the oil and that consequently tar, heavy residuum oils, and other like substances of a greater gravity than water may be employed as the selective agent. The question arises whether the selective action of the oil or tar when the separation is effected by the second apparatus differs from the selective action of oil when the separation is effected in the first apparatus. The answer is in the negative. The “coating or absorbing” described in connection with the second apparatus is not different in character from the entrapping described in the first apparatus. The “oil globules” hold and carry the metallic particles and are taken up by the oiled surface of the apron which also pick up from the pulp such particles of metallic substances as have escaped selection by the oil in the mixer, that is to say such particles as have not been coated and carried in the “oil globules.” The separation of the oil from the minerals may be effected in a centrifugal machine in the manner described.

The first claim on which the contest arises is as follows: “In processes for separating minerals “by the selective action of oil, the addition of a “small quantity of acid to the oil or water “employed in the process, or to both substances, as and for the purpose set forth.”

There is no claim for the general principle of acidulation in any process for separating minerals. No such construction was put forward on behalf of the Appellants. The claim is "in processes for separating minerals by the selective action of oil." The first question to determine is the meaning of the words "the selective action of oil." They occur in the title, in the body of the specification, and in the claim, and should be construed in the same sense throughout, unless there is some special differentiation introduced by the context in which they occur. No such source of special differentiation was suggested in argument on behalf either of the Appellants or the Respondents. The Appellants contended that the expression "the selective action of oil" is referable only to conditions where the oil has a free choice between the two kinds of particles, selecting one and leaving the other, such conditions only prevailing in a freely flowing pulp. The Respondents did not seriously question this limitation, but denied that it was material at what stage in the process the selection took place, and that such selection could be made though in the first instance the whole mixture was greased. So far as this difference is of importance it only affects the issue of validity, since the Respondents in the alleged infringement undoubtedly use a watery pulp such as is used by the Appellants. The Respondents further contended that the expression "the selective action of oil" was referable only to conditions in which the oil is present in sufficient quantities to entrap or coat or absorb the metallic particles, and is of sufficient tenacity to carry these particles in the process of separation, whether by buoyancy or in the form of oil globules. Their Lordships are of opinion that this contention of the Respondents is well founded, and that the same considerations apply whether

the process is carried out by the apparatus shown in figures (1) and (2), or by the apparatus shown in figure (3).

The remaining portion of claim 1 presents no difficulties in construction: "the addition of a small quantity of acid to the oil or water employed in the process, or to both substantially, as and for the purpose set forth." The words "substantially as set forth" refer to lines 35 to 40 on page 1 of the specification, and the words "for the purpose set forth" simply denote an acidulation whereby the selective action of the oil is enhanced. There are no special directions as to quantity, but none are necessary.

The invention claimed is therefore the enhancement of the action of oil, as a selective agent, by the addition of a small quantity of acid to the oil or water in any process of separation in which the oil is adequate in quantity and of sufficient tenacity to entrap or coat mineral particles in a watery pulp, and to hold or carry such particles until separation is effected. There is no limitation to the two forms of apparatus specially described in the specification.

The question whether the discovery claimed in the patent constitutes invention, such as will support the validity of a patent grant, is a question of fact to be determined in each case upon all the relevant circumstances. In the present case there is no substantial difficulty. There is clearly no anticipation, nor was this case put forward in argument. The discovery of the patentee was at the date of the patent both novel and useful, resulting in a new process of commercial importance and value. If a discovery complies with these tests there is invention sufficient to give validity to a patent grant, and it does not matter whether the discovery was the result of long research or of a sudden thought. The patentee gives no theory

of the action on which his invention depends and he is under no obligation to do so. It is said that the theory is not understood. In such a case prevision is not possible, and it is difficult to negative novelty unless the actual invention claimed has been either disclosed or used prior to the publication of the patent.

The last issue is that of infringement. Have the Respondents either directly or indirectly used the invention of the Appellants or any part thereof without their leave or authority first obtained, in the process which they employ for separating mineral substances from the earthy or rocky constituents of ore? There is no suggestion of leave or authority. It becomes necessary therefore to ascertain what is the method in fact employed by the Respondents in the process alleged to be an infringement of the patent.

There is practically no controversy as to the main factors in the process used by the Respondents. In answer to interrogatories administered by the Appellants, the Respondents state that at relevant dates they did use a process in which pulverised ore and water are brought into contact with oleic acid; in which pulverised ore and water are mingled with oleic acid; in which oleic acid is mingled or mixed with pulverised ore and water; and further that they did use at relevant dates a process in which a mixture consisting of oil, water, and oleic acid was in the initial stage slightly acidulated; in which sulphuric acid was added to a mixture of ore, water, and oleic acid, and in which oleic acid was added to a mixture of ore, water, and sulphuric acid. The Respondents however alleged that their process could work with practical utility without any admixture of oil: but, whether this is so or not, oil was in fact used, and the issue of infringement must be decided on this basis. It appears moreover to be proved by experiments made by

Mr. Ballantyne that the oil used by the Respondents plays an effective part in the success of their process. If the Respondents desire in the future to use a process without any admixture of oil they can do so, since the Appellants do not claim that in such a process their right would be infringed.

The real difficulty which their Lordships have to determine is whether the Respondents in the process of separation which they employ, entrap or coat and hold or carry the metallic particles in oil, using oil as the selective agent. The Respondents deny that they in any way use the Appellants' invention, and say that their process is essentially distinct, and that its successful operation depends on the law of surface tension. It is not incumbent on the Respondents to explain the law on which the success of their process depends. The Chief Judge in Equity has not found it necessary to decide whether the true explanation of the Respondents' process is the law of surface tension, but states that he is inclined to think that the balance of evidence is in favour of the view of Professor Pollock. This view is very clearly expressed in an answer given by Professor Pollock to Question 5610:

“ I think that the main fact that underlies the
“ working of the Defendants' process is that
“ water in the presence of air wets the gangue
“ material but does not wet the metallic particles.
“ That combined with another fact which may be
“ stated in this way, that liquids behave as if
“ they were contained in an elastic membrane
“ which is always tending to contract, gives the
“ result that if a bubble of air rising through
“ the liquid meets a gangue particle the mutual
“ forces are those of repulsion, whereas if it
“ meets a metallic particle the metallic particle
“ pierces the surface and the forces are such as
“ to entrap the metallic particles on the air side

“ of the liquid air surface.” Professor Pollock produced a drawing at the trial to illustrate his meaning, and much assistance was given to their Lordships by a drawing made and explained by the leading counsel for the Respondents. The attention of their Lordships was directed to many other relevant passages in the evidence of Professor Pollock, and to *Rayleigh on Forces*, Vol. 3, page 353. Whether Professor Pollock is right to the whole extent of the theory he expounds it is unnecessary for the Board to determine. The importance of Professor Pollock’s evidence is that he shows that surface tension might account for the success of the Respondents’ process, to this extent displacing any inference that the addition of an acid to a mixture of oil and watery pulp in a process of separation necessarily implies the use of the invention of the Appellants.

Apart from any question of theory the Respondents use oil in their process under conditions which make it almost impossible to entrap or coat and hold the metallic particles by the selective agency of oil. The Respondents use a thin oil at a temperature of 120° Fahr., the quantity is minute, not more than 2 or 3 pounds to a ton of ore, or about 2 or 3 pints of oil to 10,000 pints of water; the resulting concentrate is practically free from oil and no mechanical contrivance to separate the oil from the metallic particles is required or used; the residue of the first concentration is further treated without any further addition of oil. There is no doubt a difference in the views of the respective experts whose standing and experience entitle them to great weight and authority; but in deciding between these views their Lordships accept the evidence of Professor Pollock to be found in Question 5780 and the following questions. This evidence may be summarised as follows: Professor Pollock is

referred to his earlier evidence and states that he does not think that the small quantity of oil introduced in the Defendants' process necessarily performs any other function than permanency in the froth and extremely minute emulsion. He allows that there may be oil in excess, and that some of the particles may get oiled, but states that this is entirely and absolutely unessential. He does not however think that more than the necessary quantity of oil is introduced to effect concentration, but that having regard to the nature of the problem it is a matter of conjecture, and exact calculation is not possible. Finally he reiterates his opinion that the Defendants' process can be accounted for without assuming selection of the metallic particles by oil. Applying this evidence, their Lordships find that the Respondents do not either directly or indirectly use the invention claimed by the Appellants, but a process essentially distinct, and that there is no infringement.

This conclusion would dispose of the whole case, but their Lordships were invited to decide the construction of the Patents Act, 1903-1909, of the Commonwealth, in its bearing on the validity of the patent, if claim 2 of the patent was held to be invalid. It was argued on behalf of the Appellants that even if claim 2, contrary to their contention, was held to be invalid, the invalidity of this claim would not affect the validity of the patent so far as it relates to any valid claim. This would be so if the Commonwealth law applied, but in the opinion of the Board it does not apply. Section 6 of the Commonwealth Act enacts that that Act shall not affect any proceedings under any State Patent Act, nor any right or liability acquired or incurred before the commencement of the Commonwealth Act. The liability of a patentee to have his patent held invalid in the event of any claim being bad is a liability within the

meaning of this saving section, and if claim 2 could not be maintained the whole patent would be invalid on this ground. Their Lordships, however, are of opinion that the invalidity of claim 2 has not been established and that the patentee has a valid grant to support the invention which he made and claimed.

In the result their Lordships will humbly advise His Majesty to affirm the decision of the Chief Judge in Equity and to dismiss the Appeal.

The Appellants will pay the Respondents' costs of the Appeal.

In the Privy Council.

THE ORE CONCENTRATION COMPANY
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[DELIVERED BY LORD PARMOOR.]

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